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09/913,434	08/14/2001	Toshihide Sekido	1275-01	9784

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IP DEPARTMENT OF PIPER RUDNICK LLP  
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EXAMINER

STAICOVICI, STEFAN

ART UNIT PAPER NUMBER

1732

DATE MAILED: 10/21/2003

8

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application N .

09/913,434

Applicant(s)

SEKIDO ET AL.

Examiner

Stefan Staicovici

Art Unit

1732

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 06 August 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 68-77 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 68-77 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Response to Amendment*

1. Applicants' amendment filed August 6, 2003 (Paper No. 7) has been entered. Claims 1-67 have been canceled. New claims 68-77 have been added.

Claims 68-77 are pending in the instant application.

### *Claim Objections*

2. Claims 76-77 are objected to because of the following informalities: in claim 76, line 3, before "distribution", "rein" should be replaced with --resin--. Appropriate correction is required.

Claim 77 is objected as a dependent claim.

### *Claim Rejections - 35 USC § 112*

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 68-77 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "small radius" in claim 68, line 3 is a relative term that renders the claim indefinite. The term "small" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be

reasonably apprised of the scope of the invention. It is unclear what Applicants are referring by a "small" comparable to a large radius. It should be noted that for the purpose of examination it has been assumed that Applicants are referring to a protrusion.

*Claim Rejections - 35 USC § 103*

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 68-71 are rejected under 35 U.S.C. 103(a) as being unpatentable over Day (US Patent No. 5,589,243) in view of Raech, Jr. (US Patent No. 3,616,111).

Day ('243) teaches the basic claimed process for manufacturing a FRP article including, stacking a plurality of cores (40) and fiber reinforced sheets (42) to a target thickness (predetermined thickness) and, impregnating said sheets with a resin to form said FRP article (see col. 7, lines 19-37). Further, Day ('243) teaches a core panel (385) sandwiched between fiberglass skins (394) that is impregnated with resin by vacuum (see col. 16, lines 34-55).

Regarding claim 68, although Day ('243) teaches a plurality of stacked plate-shaped cores, Day ('243) does not teach a plurality of stacked plate-shaped cores including a curved portion having a small radius. Raech, Jr. ('111) teaches a plurality of stacked plate-shaped cores (20) including at least one protrusion (curved portion having a small radius) (28) (see col. 3, lines 4-26 and Figure 3). Therefore, it would have been obvious for one of ordinary skill in the art to

have provided plurality of stacked plate-shaped cores including a curved portion having a small radius (protrusions) as taught by Raech, Jr. ('111) in the process of Day ('243) because, Raech, Jr. ('111) specifically teaches that such protrusions provide a locking mechanism that prevents lateral movement of said stacked plate-shaped cores, hence providing improved alignment during the molding process which provides for an improved molded product.

In regard to claim 69, Day ('243) teaches that said cores have a thickness ranging from 0.5-12 inches (12-305 mm) (see col. 7, lines 40-44). Further, Day ('243) teaches cores having a specific gravity ranging from 2 to 16 pounds per cubic foot (0.03-0.25 grams per cubic centimeter) (see col. 1, line 66 and col. 2, line 37).

Specifically regarding claim 70, Day ('243) teaches a plurality of stacked plate-shaped cores that come into contact with each other. Further, Raech, Jr. ('111) teaches a plurality of stacked plate-shaped cores (20) including at least one protrusion that come into contact with each other (curved portion having a small radius) (28) (see col. 3, lines 4-26 and Figure 3).

Regarding claim 71, Day ('243) teaches interposed fiber reinforced sheets (42) and (399) (see Figure 35). Further, Day ('243) teaches that reinforcing webs (390) are impregnated with resin (see col. 16, lines 34-55 and Figure 35).

7. Claims 68, 70, 72-74 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seemann, III *et al.* (US Patent No. 5,721,034) in view of Day (US Patent No. 5,589,243) and in further view of Raech, Jr. (US Patent No. 3,616,111).

Seemann, III *et al.* ('034) teach the basic claimed process of manufacturing a FRP article including, providing a core (60), placing a distribution medium (64) having a net-like structure

(see column 5, lines 17-20) onto said core (60), wrapping said core (60) and distribution medium (64) with fiber material (66) to form a wrapped core, placing a vacuum bag (68) over said wrapped core and inserting resin while drawing a vacuum onto said vacuum bag (68) to impregnate said fiber material (66) and form said FRP article (see column 5, lines 11-35).

Regarding claim 68, although Seemann, III *et al.* ('034) teach a processing for making large composite structures, Seemann, III *et al.* ('034) do not specifically teach stacking a plurality of cores. Day ('243) teaches a process for manufacturing a FRP article including, stacking a plurality of cores (40) and fiber reinforced sheets (42) and impregnating said sheets with a resin to form said FRP article (see col. 7, lines 19-37). Further, Day ('243) teaches a core panel (385) sandwiched between fiberglass skins (394) that is impregnated with resin by vacuum (see col. 16, lines 34-55). Therefore, it would have been obvious for one of ordinary skill in the art to have stacked cores as taught by Day ('243) because, Day ('243) teaches that stacking of cores forms large composite structures, whereas Seemann, III *et al.* ('034) requires cores to form large composite structures.

Further regarding claim 68, although Seemann, III *et al.* ('034) in view of Day ('243) teaches a plurality of stacked plate-shaped cores, Day ('243) does not teach a plurality of stacked plate-shaped cores including a curved portion having a small radius. Raech, Jr. ('111) teaches a plurality of stacked plate-shaped cores (20) including at least one protrusion (curved portion having a small radius) (28) (see col. 3, lines 4-26 and Figure 3). Therefore, it would have been obvious for one of ordinary skill in the art to have provided plurality of stacked plate-shaped cores including a curved portion having a small radius (protrusions) as taught by Raech, Jr.

(‘111) in the process of Seemann, III *et al.* (‘034) in view of Day (‘243) because, Raech, Jr. (‘111) specifically teaches that such protrusions provide a locking mechanism that prevents lateral movement of said stacked plate-shaped cores, hence providing improved alignment during the molding process which provides for an improved molded product.

In regard to claim 70, Day (‘243) teaches a plurality of stacked plate-shaped cores that come into contact with each other. Further, Raech, Jr. (‘111) teaches a plurality of stacked plate-shaped cores (20) including at least one protrusion that come into contact with each other (curved portion having a small radius) (28) (see col. 3, lines 4-26 and Figure 3). Therefore, it would have been obvious for one of ordinary skill in the art to have provided plurality of stacked plate-shaped cores including a curved portion having a small radius (protrusions) as taught by Raech, Jr. (‘111) in the process of Seemann, III *et al.* (‘034) in view of Day (‘243) because, Raech, Jr. (‘111) specifically teaches that such protrusions provide a locking mechanism that prevents lateral movement of said stacked plate-shaped cores, hence providing improved alignment during the molding process which provides for an improved molded product.

Specifically regarding claim 72, Seemann, III *et al.* (‘034) a resin distribution medium having a plurality of channels (14, 18) (see column 2, lines 53-65 and Figure 1).

Regarding claims 73-74, Seemann, III *et al.* (‘034) placing a distribution medium (64) having a net-like structure (see column 5, lines 17-20) onto said core (60), wrapping said core (60) and distribution medium (64) with fiber material (66) to form a wrapped core, placing a vacuum bag (68) over said wrapped core and inserting resin while drawing a vacuum onto said

vacuum bag (68) to impregnate said fiber material (66) and form said FRP article (see column 5, lines 11-35).

8. Claim 75 is rejected under 35 U.S.C. 103(a) as being unpatentable over Day (US Patent No. 5,589,243) in view of Raech, Jr. (US Patent No. 3,616,111) and in further view of Newsom (US Patent No. 4,554,036) and Folsom *et al.* (US Patent No. 5,676,979).

Day ('243) in view of Raech, Jr. ('111) teaches the basic claimed process as described above.

Regarding claim 75, Day ('243) in view of Raech, Jr. ('111) do not teach vacuum impregnation of a portion of a resin molded article that is not impregnated with resin. Newsom ('036) teaches a process of repairing a fiber reinforced composite article including, providing a resin pre-impregnated fibrous repair material at the repair site, placing a vacuum bag over said repair site and drawing a vacuum while curing said resin pre-impregnated fibrous repair material (see Abstract and Figure 2). Therefore, it would have been obvious for one of ordinary skill in the art to have vacuum resin molded a portion of the molded article not impregnated with resin as taught by Newsom ('036) in the process of Day ('243) in view of Raech, Jr. ('111) because, Newsom ('036) specifically teaches that such a process provides a less expensive method for repairing composite materials, hence providing for improved efficiency. Further regarding claim 75, Day ('243) in view of Raech, Jr. ('111) and in further view of Newsom ('036) do not teach injecting a resin material. Folsom *et al.* ('979) teach a process for repairing resin-dry areas including, injecting resin into said resin-dry area (see column 2, lines 5-25 and Figure 2). Therefore, it would have been obvious for one of ordinary skill in the art to have injected resin



rather than using a resin pre-impregnated fibrous repair material as taught by Folsom *et al.* ('979) in the process of Day ('243) in view of Raech, Jr. ('111) and in further view of Newsom ('036) because, Folsom *et al.* ('979) specifically teach that such a process allows for reduced costs and improved structural integrity of composite materials (see column 2, lines 51-59).

9. Claims 76-77 are rejected under 35 U.S.C. 103(a) as being unpatentable over Day (US Patent No. 5,589,243) in view of Raech, Jr. (US Patent No. 3,616,111) and in further view of Newsom (US Patent No. 4,554,036), Folsom *et al.* (US Patent No. 5,676,979) and Seemann (US Patent No. 5,052,906).

Day ('243) in view of Raech, Jr. ('111) and in further view of Newsom ('036) and Folsom *et al.* ('979) teach the basic claimed process as described above.

Regarding claims 76-77, Day ('243) in view of Raech, Jr. ('111) and in further view of Newsom ('036) and Folsom *et al.* ('979) do not teach using a resin distribution medium and a resin permeable peel-ply. Seemann ('906) teach a process of manufacturing a FRP article including, placing a resin permeable peel-ply (7) between a distribution medium (5) and fiber reinforced material (9) to permit uniform distribution of resin upon inserting resin while drawing a vacuum to impregnate said fiber reinforced material (9) and to allow said resin distribution medium (5) be easily removed (see column 4, line 68 through column 5, line 3 and column 5, lines 10-25 and, Figure 1). Therefore, it would have been obvious for one of ordinary skill in the art to have provided a resin distribution medium having a net-like structure and a resin permeable peel-ply as taught by Seemann ('906) in the process of Day ('243) in view of Raech, Jr. ('111) and in further view of Newsom ('036) and Folsom *et al.* ('979) because, Seemann

('906) specifically teach that a resin distribution allows for uniform resin distribution during a vacuum assisted molding process hence, improving product quality.

10. Claims 75-77 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seemann, III *et al.* (US Patent No. 5,721,034) in view of Day (US Patent No. 5,589,243) and in further view of Raech, Jr. (US Patent No. 3,616,111), Newsom (US Patent No. 4,554,036) and Folsom *et al.* (US Patent No. 5,676,979).

Seemann, III *et al.* ('034) in view of Day ('243) and in further view of Raech, Jr. ('111) teach the basic claimed process as described above.

Regarding claim 75, Seemann, III *et al.* ('034) in view of Day ('243) and in further view of Raech, Jr. ('111) do not teach vacuum impregnation of a portion of the molded article not impregnated with resin. Newsom ('036) teaches a process of repairing a fiber reinforced composite article including, providing a resin pre-impregnated fibrous repair material at the repair site, placing a vacuum bag over said repair site and drawing a vacuum while curing said resin pre-impregnated fibrous repair material (see Abstract and Figure 2). Therefore, it would have been obvious for one of ordinary skill in the art to have vacuum impregnated a portion of the molded article not impregnated with resin as taught by Newsom ('036) in the process of Seemann, III *et al.* ('034) in view of Day ('243) and in further view of Raech, Jr. ('111) because, Newsom ('036) specifically teaches that such a process provides a less expensive method for repairing composite materials, hence providing for improved efficiency. Further regarding claim 75, Seemann, III *et al.* ('034) in view of Day ('243) and in further view of Raech, Jr. ('111) and Newsom ('036) do not teach injecting a resin material. Folsom *et al.* ('979) teach a process for

repairing resin-dry areas including, injecting resin into said resin-dry area (see column 2, lines 5-25 and Figure 2). Therefore, it would have been obvious for one of ordinary skill in the art to have injected resin rather than using a resin pre-impregnated fibrous repair material as taught by Folsom *et al.* ('979) in the process of Seemann, III *et al.* ('034) in view of Day ('243) and in further view of Raech, Jr. ('111) and Newsom ('036) because, Folsom *et al.* ('979) specifically teach that such a process allows for reduced costs and improved structural integrity of composite materials (see column 2, lines 51-59).

In regard to claims 76-77, Seemann ('906) teach placing a resin permeable peel-ply (7) between a distribution medium (5) and fiber reinforced material (9) to permit uniform distribution of resin upon inserting resin while drawing a vacuum to impregnate said fiber reinforced material (9) and to allow said resin distribution medium (5) be easily removed (see column 4, line 68 through column 5, line 3 and column 5, lines 10-25 and, Figure 1).

### ***Response to Arguments***

11. Applicants' remarks filed August 6, 2003 (Paper No. 7) have been considered.

Applicants' arguments are drawn to a newly presented claim limitation not previously presented that has been rejected in this Office Action as set forth above.

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

#### *Conclusion*

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stefan Staicovici, Ph.D. whose telephone number is (703) 305-0396. The examiner can normally be reached on Monday-Friday 8:00 AM to 5:30 PM and alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael P. Colaianni, can be reached at (703) 305-5493. The fax phone number for this Group is (703) 305-7718.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0661.

Stefan Staicovici, PhD



Primary Examiner

10/17/03

AU 1732

October 17, 2003